Abstract

Neural differentiation of mouse hair follicle stem cells using modified Woodbuey method.

Introduction

The differentiation of hair follicle stem cells (HFSCs) into neuronal and glial cells represents a promising cell-based therapy for neurodegenrative diseases. The bulge region of hair follicle has been reported as a putative source of hair follicle stem cells. In the present study, two different neural induction methods were used to differentiate HFSCs.

Material and Methods

Bulge stem cells were isolated and cultured in DMEM/F12 and differentiated using serum free condition and modified Woodbury methods, and analyzed using morphometric assessment and RT-PCR technique.

Results

Our results showed that undifferentiated HFSCs expressed nestin and CD34 as stemness markers. The neural like cells derived from HFSCs sprouted small and thin processes and expressed MAP2 and GFAP as neuronal and glial cell markers, respectively. RT-PCR analysis showed that these genes were upregulated in serum free condition compared to Woodbury group.

Conclusion

The results indicated that the HFSCs were heterogenouse cell populations which express stem cell markers. Morevere, they can differentiate into neural like cells more efficiently using serum free condition compared to Woodbury method.

Keywords: hair follicle stem cells, neural differentiation, Woodbury method, serum free condition